Remarks/Arguments:

The Office action dated April 7, 2005 rejects each of claims 1-43 as amended in a preliminary amendment dated July 1, 2004 as follows:

Claims 1-5, 9-11, 13-20, 24-26, 28-34, and 37-43 were rejected as anticipated by U.S. Pat. No. 6,871,982 to Holman et al (hereinafter, Holman);

Claims 6-8, 12, 21-23, 27, and 35-36 were rejected as obvious over Holman in view of U.S. Pat. No. 5,121,983 to Lee et al (hereinafter, Lee).

Attached to this Amendment/Response is an information disclosure statement citing two references, EP 0807832 to Omron Corporation (hereinafter, Omron) and U.S. Pat. No. 6,416,182 to Kakuda et al (hereinafter, Kakuda), that were disclosed in a companion PCT application. The preceding claim amendments and following remarks are seen to patentably distinguish over each of Holman, Lee, Omron, and Kakuda, alone or in any combination.

The independent claims include claims 1, 16, 33, 43, and 53. The added and amended claims are supported by the written description as follows. The optically transparent hemisphere recited in some of the amended claims is supported at least at Figs. 3A-3G and related text, especially page 10, lines 15-20 and 35-38. The refractive surfaces with a diffractive or refractive surface pattern or micro optical structures recited in some of the amended claims are supported by Figs. 3D-3F and page 11, lines 5-6, 13-14, and 16-20, with the broader term micro structure recited at page 11, lines 27 and 31. The micro structures on a surface not perpendicular to a line between the source and the micro-display of claim 53 is supported at page 11, lines 16-19.

Exemplary support for the subject matter of the added dependent claims may be found in the application as follows:

Claim 44, 49, 58, 63, 68, 69: page 6, lines 29-32;
Claim 45: page 13, lines 14-15;
Claim 46: page 11, lines 26-29;
Claims 47, 48, 51, 52, 60, 61, 66, 67: page 9, lines 16-18;
Claim 50: page 13, lines 17-19;
Claim 54: Figs. 3C-3G, page 10, lines 35-38, page 11, lines 24-29;

Claim 55:	page 10, lines 5-7, 22;
Claim 56:	Figs. 3F-3G, page 11, lines 16-29;
Claim 57:	Figs. 3D-3F, page 11, lines 5-6, 13-14, 16-20;
Claim 59, 65:	Figs. 3C-3F, page 9, lines 30-31, page 10, lines 35-36, page 11, lines 2-8;
Claim 62:	Fig. 4A and page 13, lines 32-35;
Claim 64:	page 9, lines 30-33.

Claim 1 is amended to recite that the beam forming component is optically transmissive and arranged to enclose substantially a hemisphere about the light source chip. Claim 1 further recites that the beam forming component is disposed to direct substantially all light, from the light source chip into the hemisphere, toward the microdisplay. Taking Figs. 1A and 29A as exemplary of the Homan device, the elements that the Examiner characterize as the beam forming component are not optically transmissive and arranged to enclose substantially a hemisphere about the Holman LED; each include reflective sidewalls 2, 912 alongside the LED that are necessarily not optically transparent. Altering this is seen to change a fundamental principle of Holman's operation. Lee is seen to include reflective mirrors A, B, C, D, that are also not optically transmissive, and the optically transmissive elements do not enclose substantially a hemisphere as claimed. Omron is also seen to use a curved reflector 3 to reflect light from the source 2, and the Omron prism arrays 34, 37 are formed on plates 32, 35 that are not seen as capable of forming substantially a hemisphere about the source. This is because the spaced plates split light and shuffle distribution of light only in the area between the plates; light entering and exiting the Omron multi-plate arrangement remains parallel to the optical axis in each and every embodiment. Kakuda's reflection mirror 2 may be disposed about a hemisphere of the light source 1, but it is not optically transmissive and no optically transmissive element or plurality of such elements in Kakuda form a hemisphere about the light source 1. None of the four references above, alone or in combination, are seen to anticipate or render obvious claim 1 as amended herein. Further, each is so different from the present invention that to modify any in order to arrive at the device of claim 1 is seen to change their principle of operation as noted above.

Claim 16 recites that the beam forming component is disposed to substantially enclose a hemisphere about the light source chip, and further that both an optically transmissive surface

and an optically reflective surface of the beam forming component each have a diffractive or refractive surface pattern. Holman is not seen to dispose a diffractive or refractive surface pattern on the reflecting sidewalls about its light source; Holman's reflective sidewalls are seen as re-directing light but not altering its characteristics at the photonic/wavelength level, such as a grating or micro-optical structure would. Holman teaches away from modifying its reflective sidewalls to impose diffractive or refractive patterns by its use of two micro-optical sheets or lenses (e.g., prism sheets 4 and 6 of Fig. 1; sheets 84 and 86 of Fig. 29A; sheets 1342 and 1346 of Fig. 42B). Specifically, Holman is seen to use the reflecting sidewalls to direct light toward a first micro-optical sheet, from which the light exits at a diverging angle. That diverging beam is then collected at another micro-optical sheet or lens, for example. Any manipulation of the wave characteristics of light are readily done at either of these two micro-optical sheets, and any micro-optics would lie in the plane of one or both of these sheets which is disposed perpendicular to the optical axis or generalized optical path. To dispose diffractive or refractive surfaces along the reflective sidewalls of Holman adds significant complexity, and is not seen to dispense with the need for two micro-optical sheets or lenses that are used for collimating light. Rather, the reflecting sidewalls are characterized as important to preserve uniform illumination (see Holman cols. 59-60 in general). Manipulation of wave or photonic aspects of light in Holman is most simply done at either or both of the planar sheets/lenses. Thus, there is no motivation to dispose diffractive/refractive structures on Holman's reflective sidewall surfaces. Neither Lee, Omron, nor Kakuda is seen to dispose diffractive or refractive patterns on any reflective surface about its light source.

Claims 33 and 43 each recite that an optically reflective surface of a plurality of surfaces that substantially enclose a hemisphere about the light source chip has one of a diffractive and a refractive surface pattern (claim 33) or micro optical structures (claim 43). As with the distinctions detailed above with respect to claim 16, none of the references to Holman, Lee, Omron or Kakuda are seen to include a diffractive or refractive surface pattern or micro-optical structures on a reflective surface about the light source. Also for reasons detailed above, there is seen no motivation to make such a modification and motivation against such a change.

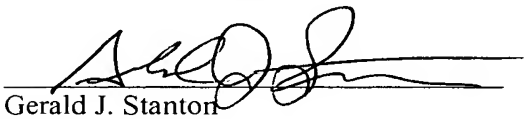
New claim 53 recites that a surface, which defines micro optical structures, is not perpendicular to a line between the light source and the micro-display. Each reference that

teaches a micro optical structure such as a diffractive or refractive pattern on a plate or lens surface teaches exactly the opposite; only an optically transmissive surface that is perpendicular to such a line has an optical grating or structure. As above, this is seen as the simplest geometry by which to manipulate the wave characteristics of light because the incident rays strike the micro optical structures most directly, at a ninety degree angle. As detailed above, there appears no motivation for and particular motivation against disposing such structures along curved reflective surfaces alongside the light source. Further, no motivation is seen in Holman, Lee, Omron, or Kakuda to dispose micro optical structures on a surface that is not perpendicular to a line between the light source and the target, because doing so would appear to decrease efficiency of the micro optical structures.

As detailed above, the teachings of Holman, Lee, Omron, and Kakuda, alone or in combination, are not seen to anticipate or render obvious any of independent claims 1, 16, 33, 43 and 53. As to the added dependent claims, no combination of references are seen to teach or suggest disposing a diffractive or refractive surface pattern or micro optical structures on an optically reflective surface as in claims 46 and 57; the specific index or refraction matching of claims 47-48, 51-52, 60-61 and 66-67; disposing micro-optical structures along an arcuate surface as in claim 55 or on at least three planar surfaces not perpendicular to a line between the light source and micro display as in claim 56; disposing a reflective substrate that, with the beam forming component, substantially envelops the light source as in claims 59 and 65; or disposing a micro display adjacent to the beam forming component as in claim 62.

The Applicant respectfully requests that the Examiner review the cited art and rejections in light of the above remarks, and pass each of claims 1-69 to issue. The undersigned representative welcomes the opportunity to resolve any matters that may remain, formal or otherwise, via teleconference at the Examiner's discretion.

Respectfully submitted:



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